

TABLE OF CONTENTS

ATTACHMENT 8

CLOSURE PLAN

I. CLOSURE PLAN.....	1
I. Closure Requirements.....	1

I. CLOSURE PLAN

I. Closure Requirements [IDAPA 58.01.05.008 and 58.01.05.012; 40 CFR Part 264, Subpart G and 270.14(B)(13)]

This Closure Plan, hereinafter referred to as the "Plan", specifies the performance standards and describes the process for final closure of the MWMUs. Upon termination of operations, the owner/operator shall willfully close the MWMUs in accordance with the applicable HWMA/RCRA closure requirements promulgated at IDAPA 58.01.05.008 (40 CFR Part 264, Subpart G). The activities and closure performance standards described herein apply only to wastes and waste constituents regulated under HWMA/RCRA. In this Plan, the term "decontamination" refers to the removal of HWMA/RCRA-regulated wastes and waste constituents. Standards and methods for management of residual radiological contamination, which is not HWMA/RCRA-regulated that may be present at the MWMUs and disposition of radiological contaminated government-furnished equipment, shall follow the DOE-ID requirements governing the management and disposal of radiological-contaminated materials.

This Plan satisfies the requirements of IDAPA 58.01.05.008 [40 CFR 264.112(a)] that waste management units have a written closure plan. Of the additional requirements at IDAPA 58.01.05.008 [40 CFR 264.111(c) (i.e., 40 CFR 264.178, 264.197, 264.228, 264.258, 264.280, 264.310, 264.351, 264.601 through 264.603 and 264.1102)], only those at IDAPA 58.01.05.008 (40 CFR 264.178 and 264.601) apply. Closure of the MWMUs in accordance with this Plan satisfies the requirements of IDAPA 58.01.05.008 (40 CFR 264.178).

Although closure under HWMA/RCRA is primarily concerned with the hazardous waste constituents in the MW managed at the MWMUs, closure is performed with full cognizance of the radiological component and the threat to human health and the environment engendered by that component. Closure will be performed to ensure the safety of personnel, as follows:

- Qualified AMWTP personnel supervise and perform closure activities in compliance with established safety procedures,
- Personnel are equipped with appropriate PPE and trained in applicable safety procedures, and

- The use of established radiological control procedures to ensure personnel and equipment are clean of radiological contamination before leaving any contaminated area.

While closure employs technologies to safeguard workers, treatment technologies that minimize the generation of aerosols and other particulates are preferentially selected.

Information specific to the closure of WMF-634 is presented in Attachment 8.A. The information pertaining to the closure of the Type II Modules, designated as WMF-628 through WMF-633, is presented in Attachment 8.B, the closure information pertaining to the Type I Module is presented in Attachment 8.C, the closure information pertaining to SWEPP is presented in Attachment 8.D, the closure information pertaining to WMF-636 Pad 2 is presented in Attachment 8.E, the closure information pertaining to the AMWTP Outside Storage Area is presented in Attachment 8.F, and the closure information pertaining to WMF-676 is presented in Attachment 8.G.

TABLE OF CONTENTS**ATTACHMENT 8.A****WMF-634 CLOSURE PLAN**

I-1	Closure Plan	1
I-1a	Partial Closure Activities	1
I-1b	Closure Performance Standard	1
I-1c	Maximum Waste Inventory	3
I-1d	Disposal or Decontamination of Equipment, Structures, and Soils	3
I-1d(1)	Sampling and Analysis	4
I-1d(2)	Disposal of Equipment	4
I-1d(3)	Equipment and Structures to be Reused	4
I-1d(4)	WMF-634 Closure Procedures	5
I-1d(5)	Order of Closure	7
I-1e	Amendment of Plan	7
I-1f	Schedule and Notification of Closure	8
I-2	Extensions for Closure Time	11
I-3	Certification of Closure	12
I-4	Post-Closure Requirements	13
I-5	Closure Financial Requirements	14
I-5a	Closure Cost Estimates	14
I-5b	Financial Assurance for Closure	14
I-5c	Liability Requirements	14
I-5d	Use of State Required Financial Mechanisms	14
I-5e	State Assumption of Responsibility	14
I-6	Post-Closure Financial Requirements	15

LIST OF TABLES

Table I-1. Closure Performance Standards	9
Table I-2. Closure Schedule.....	10

I-1 Closure Plan [IDAPA 58.01.05.008 and 58.01.05.012; 40 CFR 264.112(b) and 270.14(b)(13)]

This section of the Closure Plan hereinafter referred to as the “Plan”, describes the closure process, standards, and activities to be employed during the closure of WMF-634. The design and operation of WMF-634 and the types of MW managed at WMF-634 are described in detail in Attachments 1, 1.A, and 2.

I-1a Partial Closure Activities [IDAPA 58.01.05.008; 40 CFR 264.112(b)(1 - 6)]

No specific plans presently exist for partial closure of WMF-634. If partial closure is considered in the future, the procedures for verification sampling, decontamination, and confirmatory sampling presented in the following sections would be applicable to such an approach. Containment enclosures, as described in Attachment 1.A, may be located within the MWMU. If a containment enclosure is closed prior to the closure of WMF-634, then all activities (e.g., sampling and analysis results, decontamination/reuse of equipment, characterization, etc.) associated with the closure of the containment enclosure will be documented in the Operating Record.

I-1b Closure Performance Standard [IDAPA 58.01.05.008; 40 CFR 264.111 and 264.112(b)(1) and (2)]

The HWMA/RCRA-regulated MWMUs will be closed in a manner such that:

- The need for post-closure maintenance is eliminated by controlling or eliminating the potential for escape of MW, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the environment;
- Closure activities generate a minimum amount of mixed or hazardous waste;
- Closure activities generate a minimum amount of non-HWMA/RCRA-regulated solid and radioactive waste;
- Hazardous waste is removed and managed in accordance with the applicable requirements of IDAPA 58.01.05.006 through 58.01.05.012 (40 CFR Parts 262 through 270); and
- Closure of the HWMA/RCRA-regulated MWMUs complies with all applicable state and federal requirements.

Performance Standard Description

1. **Equipment to be Reused or Salvaged:** Upon closure, the performance standard achieved for reusable structures and equipment from the closed MWMU will be the clean closure standard as verified by sampling and analysis of swipe or decontamination rinsate samples, as appropriate. Decontamination will be considered successful based on confirmatory sampling and analysis when the analytical results verify that the hazardous waste constituent(s) of concern in the samples is less than ten times the practical quantitation level, as defined in the appropriate procedure of SW-846.
2. **Equipment to be Disposed:** The visible surfaces of equipment, structures, etc., that are to be disposed will be decontaminated by an alternative treatment technology pursuant to IDAPA 58.01.05.011 (40 CFR 268.45) to achieve the clean debris surface standard. "Clean debris surface" means that the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discoloration, and soil and waste in cracks, crevices, and pits may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area.' Equipment on which the contaminated surface is not readily visible (e.g., pipe) will be treated by an appropriate alternative treatment standard for hazardous debris (e.g., macroencapsulation) per IDAPA 58.01.05.011 (40 CFR 268.45), as based on Operating Records (including analytical data) for the waste treated by the equipment.

Newly-Generated HWMA/RCRA Wastes

HWMA/RCRA-regulated waste generated during closure will be classified as newly-generated waste, and will be managed as described in Section I-1d.

Safety Considerations

Although closure under HWMA/RCRA is primarily concerned with the hazardous waste constituents in MW, closure must be performed with full cognizance of the radiological component and the threat to human health and the environment engendered by that component. This Plan reflects the practical realities of performing work in an environment highly contaminated with TRU radionuclides. Closure will be performed to ensure the safety of personnel, as follows:

- Qualified personnel will supervise and perform closure activities in compliance with established safety procedures.
- Whenever practicable, closure activities will be performed remotely using manipulators, etc.
- Personnel will be equipped with appropriate PPE and be trained in comprehensive, applicable safety procedures.
- The use of established radiological control procedures to ensure personnel and equipment are radiologically decontaminated before leaving any radiologically contaminated area.

Although closure will employ technologies to safeguard workers (e.g., HEPA-filtered vacuum cleaners and portable containment), treatment technologies that minimize the generation of radioactive air-borne particles (dust) will be preferentially selected.

I-1c Maximum Waste Inventory [IDAPA 58.01.05.008; 40 CFR 264.112(b)(3)]

The estimated total maximum HWMA/RCRA-regulated waste inventory at WMF-634 is 4,661 m³ (1,231,430 gal). HWMA/RCRA-regulated waste is stored in a variety of containers as described in Section D-1(a)(1) of Attachment 1.A. Details on the methods for removing, transporting, treating, storing or disposing of HWMA/RCRA-regulated waste are found in Section I-1d of this Plan. The AMWTP has the goal of disposing all waste at the WIPP or other off-Site disposal facility. Closure will not commence until all waste has been removed from WMF-634.

I-1d Disposal or Decontamination of Equipment, Structures, and Soils [IDAPA 58.01.05.008; 40 CFR 264.112(b)(4) and 264.114]

Because operational methods at the MWMUs place emphasis on the containment and timely response to spills, and because of the MWMUs design, releases to the environment are unlikely. Therefore, disposal of contaminated soils pursuant to this Plan is not anticipated. However, if soil contamination is found it shall be addressed under the direction of DOE-ID. The following subsections provide a description of the actions necessary to manage the disposal or cleaning/decontamination of equipment or structures contaminated with HWMA/RCRA – regulated waste or waste constituents. Before beginning closure activities, all waste will be

removed from the MWMU. The types of hazardous waste, if present, managed during closure are expected to have the same HWNs found in Table C-1 of Attachment 2.

I-1d(1) Sampling and Analysis

All sampling and analysis performed for closure is performed in accordance with the quality standards established in a Closure QAPjP, which will be submitted with the closure notification 45 days before closure of the MWMU begins. The Closure QAPjP will detail sampling and analysis procedures in accordance with *SW-846*, the ASTM Annual Book of ASTM Standards, or other EPA-approved methods.

I-1d(2) Disposal of Equipment

Typically, contaminated ancillary equipment from a MWMU, which is to be disposed, is decontaminated in accordance with the required treatment standards, or other technologies available and approved for such use at the time of closure, for hazardous debris [IDAPA 58.01.05.011 (40 CFR 268.45)] to attain the clean debris surface standard.

An assessment of the Operating Record will be conducted to determine the extent of potential contamination. Per this assessment, contaminated equipment will be decontaminated for all HWMA/RCRA-regulated hazardous constituents of concern that are present. The specific technology or technologies will be selected at the time of closure and during closure based upon the hazardous constituents of concern present, and the effectiveness of the selected technology in attaining the closure performance standard. Equipment for which the contaminated surface is not readily visible (e.g., pipe) will be treated by an appropriate alternative treatment standard for hazardous debris (e.g., macroencapsulation) per IDAPA 58.01.05.011 (40 CFR 268.45, Table 1) requirements.

Disposal of decontaminated equipment shall be in accordance with the applicable HWMA/RCRA requirements.

I-1d(3) Equipment and Structures to be Reused

To be protective of human health and the environment, ancillary equipment and structures designated for reuse are decontaminated to meet the clean closure performance

standard, as verified by sampling and analysis. An assessment of the Operating Record will be conducted to determine the extent of potential contamination. Contaminated equipment and structures are decontaminated to meet the clean closure standard as verified by confirmatory sampling and analysis as described in the Closure QAPjP. The following section provides additional details for closure.

I-1d(4) WMF-634 Closure Procedures

Ventilation systems are maintained during closure, as required, to provide contamination control. To control the spread of airborne and surface contamination, portable containment, such as tents or glove bags, may also be employed during closure.

Cleaning/Decontamination. The MWMUs are designed and constructed to prevent migration of MW constituents. Spills and leaks are cleaned up in a timely manner and documented appropriately. See Attachment 7 for additional information.

After operations cease and all remaining waste has been removed from the MWMU, surfaces used for storage of HWMA/RCRA-regulated waste containers shall be thoroughly cleaned. These surfaces are swept or vacuumed using vacuum cleaners equipped with HEPA filters, if required. Following cleaning, qualified personnel shall visually inspect the MWMU for stains or other signs of spills and/or leaks of waste constituents. Additionally, the Operating Record will be reviewed to determine if further cleaning and/or decontamination is required.

Any HWMA/RCRA-regulated waste residues generated during cleaning/decontamination are placed in approved containers and managed in accordance with the applicable HWMA/RCRA requirements.

Cleaning/Decontamination Verification. For ancillary equipment or structures to be reused, confirmatory sampling and analysis (as outlined in the Closure QAPjP) will follow cleaning/decontamination, until it is established that cleaning/decontamination procedures have removed hazardous constituents of concern to the clean closure standard. If verification testing detects hazardous constituents of concern above the clean closure standard, the contaminated equipment or structure is decontaminated again, followed by confirmatory sampling and analysis. Decontamination is achieved when analytical results verify that the clean closure

standard has been met. Once it has been established that the standard has been satisfied, the equipment or structure can be considered free of HWMA/RCRA-regulated hazardous constituents and released for reuse.

Cracked or Unsealed Surfaces. Surfaces used for storage of HWMA/RCRA-regulated constituents are inspected on a regular basis to identify structural problems that could result in migration of MW constituents. See Attachment 4 for additional information. If inspections during closure identify that surfaces used for storage are cracked or unsealed, the following steps are employed to meet the closure performance standard:

- Review the Operating Record to determine if HWMA/RCRA-regulated hazardous constituents of concern may be present,
- Decontaminate/remediate as appropriate for the HWMA/RCRA-regulated hazardous constituents of concern using a technology appropriate for the hazardous constituents of concern, and
- Sample and analyze decontaminated surfaces in accordance with the Closure QAPjP until the clean closure standard is achieved.

Decontamination materials and equipment. Spent decontamination materials (e.g., swabs, wipes, PPE, sampling equipment, HEPA vacuum cleaner filters) are characterized per process knowledge or sampled and analyzed in accordance with the Closure QAPjP. Based on the analytical results, the spent decontamination materials are placed in an appropriate container. All HWMA/RCRA-regulated wastes shall be placed in a compatible container that is labeled with a barcode identifier and managed in accordance with the applicable HWMA/RCRA requirements.

Equipment used for closure cleanup/decontamination is managed using the same procedures and standards as described previously in this section.

Any decontamination liquids are contained within the work area, then collected and characterized by process knowledge or in accordance with the Closure QAPjP. Spill booms, spill control pillows, swabs, or other absorbent material(s) may be used to contain the decontamination liquids and to facilitate removal. Spent decontamination materials and other wastes may be treated by an AMWTP technology (see discussion below for the order of closure),

or packaged for transport to another waste management unit. Following decontamination, the work area is sampled and analyzed, as required, in accordance with the Closure QAPjP.

I-1d(5) Order of Closure

To the extent practicable, closure activities associated with the closure of a MWMU are accomplished utilizing other HWMA/RCRA-permitted MWMUs at the AMWTP, including treatment or storage at other AMWTP waste management units. Decontamination activities are performed in a step-wise fashion to maximize the use of WMF-676 and thereby minimize the quantity of HWMA/RCRA-regulated decontamination wastes requiring subsequent management. The major steps in the closure of a MWMU include:

- Removal of waste inventory followed by treatment, to the extent practicable, at WMF-676;
- Cleaning/decontamination in accordance with this Plan;
- Inspection and verification in accordance with this Plan and the Closure QAPjP to assure that the clean closure and/or performance standards at IDAPA 58.01.05.008 (40 CFR 264.111) are satisfied;
- Management of HWMA/RCRA-regulated newly generated waste in accordance with this Plan and the Closure QAPjP; and
- Closure certification.

I-1e Amendment of Plan [IDAPA 58.01.05.008; 40 CFR 264.112(c)]

Amendments to this Plan will be in accordance with IDAPA 58.01.05.008 [40 CFR 264.112(c)]. A copy of the Plan and supporting documentation is maintained as part of the Operating Record. The Plan will be amended in the future:

- At the time of closure to address the schedule for closure, changes to regulatory standards for cleanup, sampling based on the Operating Record, decontamination methods/technologies to be employed, changes to how and where disposal of equipment and structures will take place, and other changes necessary to accomplish the closure performance standard specified at IDAPA 58.01.005.008 (40 CFR 264.111);
- If it becomes desirable or necessary to close the MWMU in advance of the schedule included in the Plan;

- 1 • Whenever changes in a MWMU's operating plans or design affects the Plan;
- 2 • If there is a change in the expected year of closure;
- 3 • If, when conducting closure activities, an unexpected event requires an amendment;
- 4 • If a change in HWMA/RCRA regulations require amending the Plan; or
- 5 • At the request of the Director.

6 The Permittee will submit a written notification that includes a copy of the amended Plan
7 to the Director 60 days before a proposed change in the operation or design of the MWMU that
8 affects the Plan; or no later than 60 days after an unexpected event occurs that affects the Plan; or
9 no later than 30 days after an unexpected event occurs during closure.

10 **I-1f Schedule and Notification of Closure [IDAPA 58.01.05.008; 40 CFR**
11 **264.112(b)(6) and (d)]**

12 The AMWTP will complete its mission in approximately 2018. At that time, a decision
13 will be made to either close the MWMU or continue its use. The following schedule assumes
14 closure in 2019; if the decision is made to operate the MWMU beyond that date, this Plan will be
15 amended as previously described. The Director will be notified at least 45 days before the
16 planned start of closure activities. Refer to Table I-2 for a summary of the schedule calendar.

Table I-1. Closure Performance Standards

Closure Performance Standard	Attainment Strategy
<p>The owner or operator must close the facility in a manner that:</p> <p>a) Minimizes the need for further maintenance.</p>	<p>Prior to closure, all HWMA/RCRA-regulated waste and waste constituents of concern will be removed from the MWMU. No waste will be accepted in the MWMU once closure has commenced.</p>
<p>b) Controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous constituents, leachates, contaminated runoffs, or hazardous waste decomposition products to groundwater, surface water, or the atmosphere.</p>	<p>MWMU will be clean closed, which entails the removal of HWMA/RCRA-regulated wastes, waste constituents, and waste decomposition products, as well as the elimination of any source material that could generate contaminated leachates or runoff. In addition, pursuant to IDAPA 58.01.05.008 [40 CFR 264.110(b)] the HWMA/RCRA post-closure requirements at IDAPA 58.01.05.008 (40 CFR 264.116 through 40 CFR 264.120, and 40 CFR Part 264, Subpart H) are not applicable to the closure of a MWMU.</p>
<p>c) Complies with the closure requirements of IDAPA 58.01.05.008 (40 CFR Part 264, Subpart G), including but not limited to, the requirements of IDAPA 58.01.05.008 (40 CFR 264.178, 264.197, 264.228, 264.258, 264.280, 264.310, 264.351, and 264.1102).</p>	<p>The Plan describes the processes used to close a MWMU in accordance the IDAPA 58.01.05.008 (40 CFR Part 264, Subpart G) closure requirements. Of the additional requirements, only those at IDAPA 58.01.05.008 (40 CFR 264.178) apply. Closure of a MWMU in accordance with this Plan satisfies the requirements at IDAPA 58.01.05.008 (40 CFR 264.178).</p>

Table I-2. Closure Schedule

Activity	Day
Notify the Director	45 days before closure initiation
Initiate closure activities	Day 0
Complete equipment decontamination	Day 100
Complete decontamination of affected surfaces	Day 140
Decontaminate tools, complete waste assessments, remove closure waste	Day 160
Verify closure performance standard has been met	Day 180
Inspect and certify closure	Day 180
Complete all closure activities	Day 180
Submit closure certification to the Director	By 60 days after closure

1 **I-2 Extensions for Closure Time [IDAPA 58.01.05.008; 40 CFR 264.113(a) and**
2 **(b)]**

3 The schedule presented in Section I-1f and Table I-2 indicates closure of a MWMU
4 occurring within the 180 days specified at IDAPA 58.01.05.008 (40 CFR 264.113). No
5 extension is requested at this time. However, it is recognized that this schedule may be
6 ambitious, and that an extension may be required. That determination will be made closer to the
7 time of closure based on the operating history of a MWMU; or during closure based on how
8 rapidly closure activities are being accomplished. If an extension becomes necessary in the
9 future, it will be presented in the amended Plan (if based on operating history) or a request will
10 be submitted at least 30 days before day 180 (if the need for an extension is identified during
11 closure).

1 **I-3 Certification of Closure [IDAPA 58.01.05.008; 40 CFR 264.115]**

2 An independent Idaho-registered professional engineer will be present during critical
3 closure activities and will certify that the closure has been performed in accordance with this
4 Plan; thereby, satisfying the requirements at IDAPA 58.01.05.008 (40 CFR 264.111). The
5 certification will be submitted for approval to the Director within 60 days of completion of
6 closure. Upon Director approval, closure will be considered complete.

1 **I-4 Post-Closure Requirements [IDAPA 58.01.05.008; 40 CFR Part 264,**
2 **Subpart G]**

3 Pursuant to IDAPA 58.01.05.008 [40 CFR 264.110(b)] the HWMA/RCRA post-closure
4 requirements at IDAPA 58.01.05.008 (40 CFR 264.116 through 40 CFR 264.120) are not
5 applicable.

1 **I-5 Closure Financial Requirements [IDAPA 58.01.05.008; 40 CFR Part 264,**
2 **Subpart H]**

3 **I-5a Closure Cost Estimates [IDAPA 58.01.05.008; 40 CFR 264.142]**

4 DOE-ID, the owner of WMF-634, as a federal government agency, is exempt from the
5 closure cost estimate requirement, in accordance with IDAPA 58.01.05.008 [40 CFR
6 264.140(c)].

7 **I-5b Financial Assurance for Closure [IDAPA 58.01.05.008; 40 CFR 264.143]**

8 DOE-ID, the owner of WMF-634, as a federal government agency, is exempt from
9 providing a financial assurance mechanism for closure, in accordance with IDAPA 58.01.05.008
10 [40 CFR 264.140(c)].

11 **I-5c Liability Requirements [IDAPA 58.01.05.008; 40 CFR 264.147 and**
12 **264.148]**

13 DOE-ID, the owner of WMF-634, as a federal government agency, is exempt from the
14 liability requirements for closure, in accordance with IDAPA 58.01.05.008 [40 CFR 264.140(c)].

15 **I-5d Use of State Required Financial Mechanisms [IDAPA 58.01.05.008; 40**
16 **CFR 264.149]**

17 DOE-ID, the owner of WMF-634, as a federal government agency, is exempt from the
18 state required financial mechanism requirements for closure, in accordance with IDAPA
19 58.01.05.008 [40 CFR 264.140(c)].

20 **I-5e State Assumption of Responsibility [IDAPA 58.01.05.008; 40 CFR**
21 **264.150]**

22 DOE-ID, the owner of WMF-634, as a federal government agency, is exempt from the
23 state assumption of responsibility requirements for closure, in accordance with IDAPA
24 58.01.05.008 [40 CFR 264.140(c)].

1 **I-6 Post-Closure Financial Requirements [IDAPA 58.01.05.008; 40 CFR Part**
2 **264, Subpart H]**

3 Pursuant to IDAPA 58.01.05.008 [40 CFR 264.140(b)], the HWMA/RCRA post-closure
4 financial requirements at IDAPA 58.01.05.008 (40 CFR 264.144 and 264.145) are not applicable
5 to WMF-634.